



Ancorsteel® 721 SH

Typical Analysis and Properties

Composition (weight %) (w/o)

C	Mn	Mo	Ni	O
<0.01	0.4	0.9	0.5	0.15

Apparent Density

3.0 g/cm³

Flow Rate

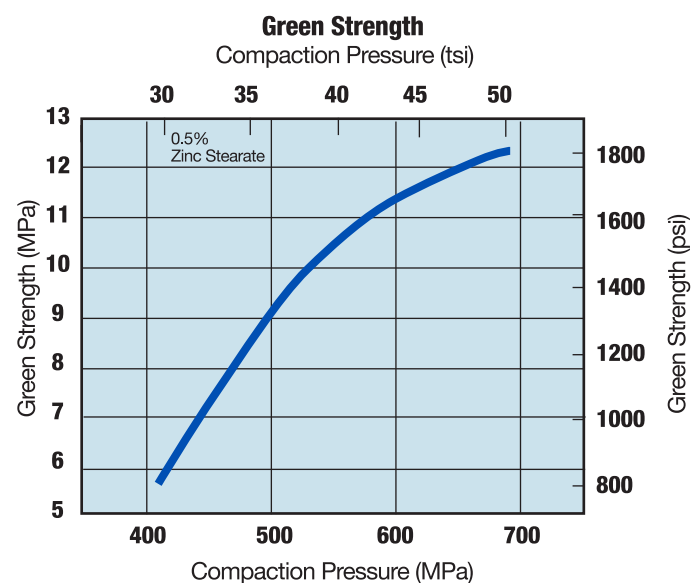
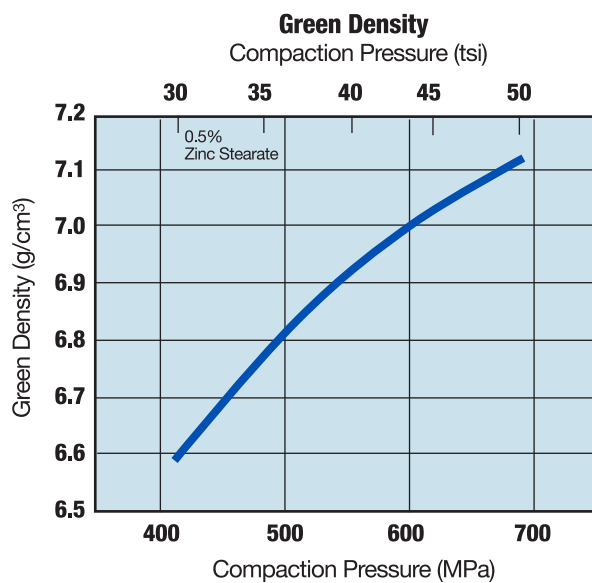
25 s/50g

Ancorsteel 721 SH is a water atomized, prealloyed steel powder specifically developed for sinter hardening. It complements Ancorsteel 737 SH as it contains slightly lower levels of molybdenum and nickel. Ancorsteel 721 SH may be used for applications where the slightly higher hardenability of Ancorsteel 737 SH is not required. With good compressibility and stable dimensional change Ancorsteel 721 SH is the powder of choice for small to medium size parts that are to be sinter hardened.

Sieve Distribution (w/o)

Micrometers	+250	-250 /+150	-150 /+45	-45
U.S. Standard Mesh	(+60)	(-60 /+100)	(-100 /+325)	(-325)
	Trace	10	70	20

The Effect of Compaction Pressure on Green Properties

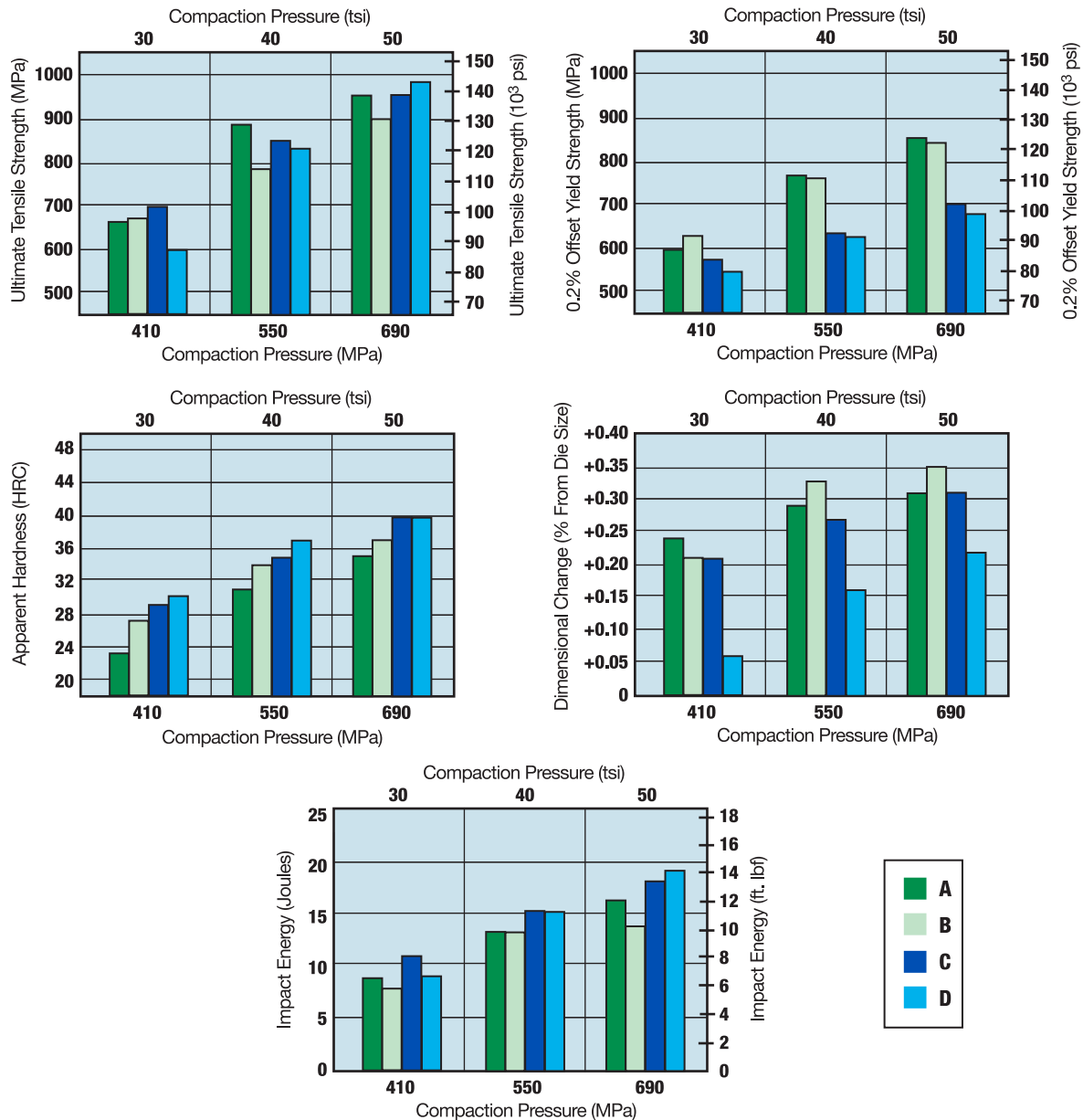


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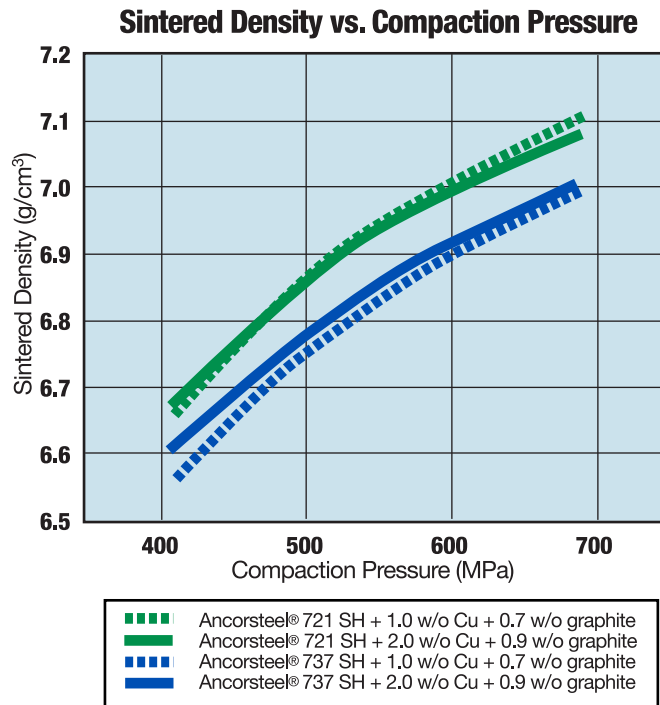
Sintered Properties

	A	B	C	D
Alloy	Ancorsteel® 721 SH	Ancorsteel® 737 SH	Ancorsteel® 721 SH	Ancorsteel® 737 SH
Copper (w/o)	1.0	1.0	2.0	2.0
Graphite (w/o)	0.7	0.7	0.9	0.9

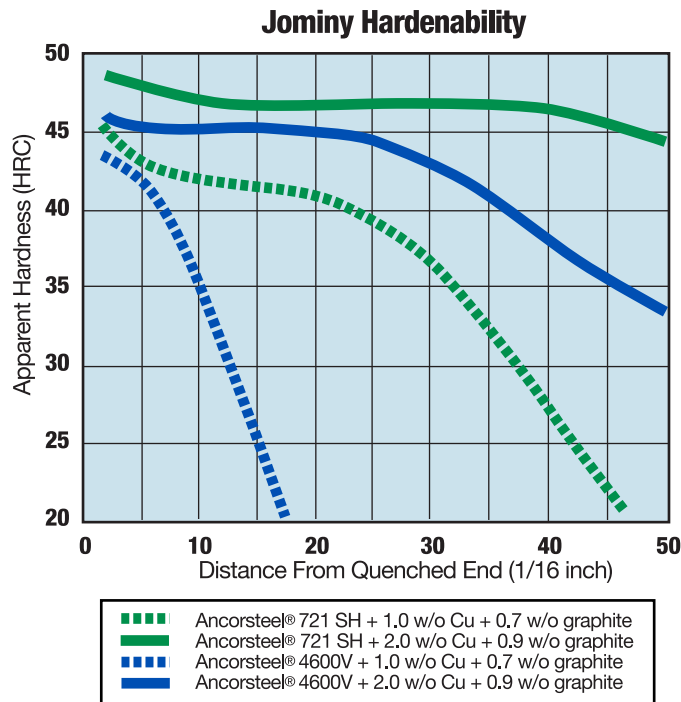


All premixes were made with 0.75 w/o Acrawax C as the lubricant. All compacts were sintered at 1120 °C (2050 °F) in a 90 v/o nitrogen/ 10 v/o hydrogen atmosphere for 15 minutes at temperature-accelerated cooling conditions include 2.75 inch/minute belt speed and 30 Hz Varicool settings leading to an average cooling rate of 1.6 °C/s in the sample between 650 °C (1200 °F) and 315 °C (600 °F); followed by a 200 °C (400 °F) temper for one hour.

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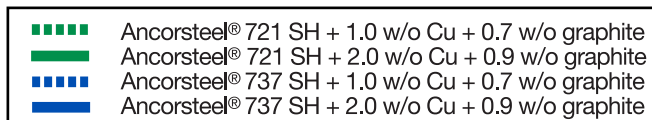
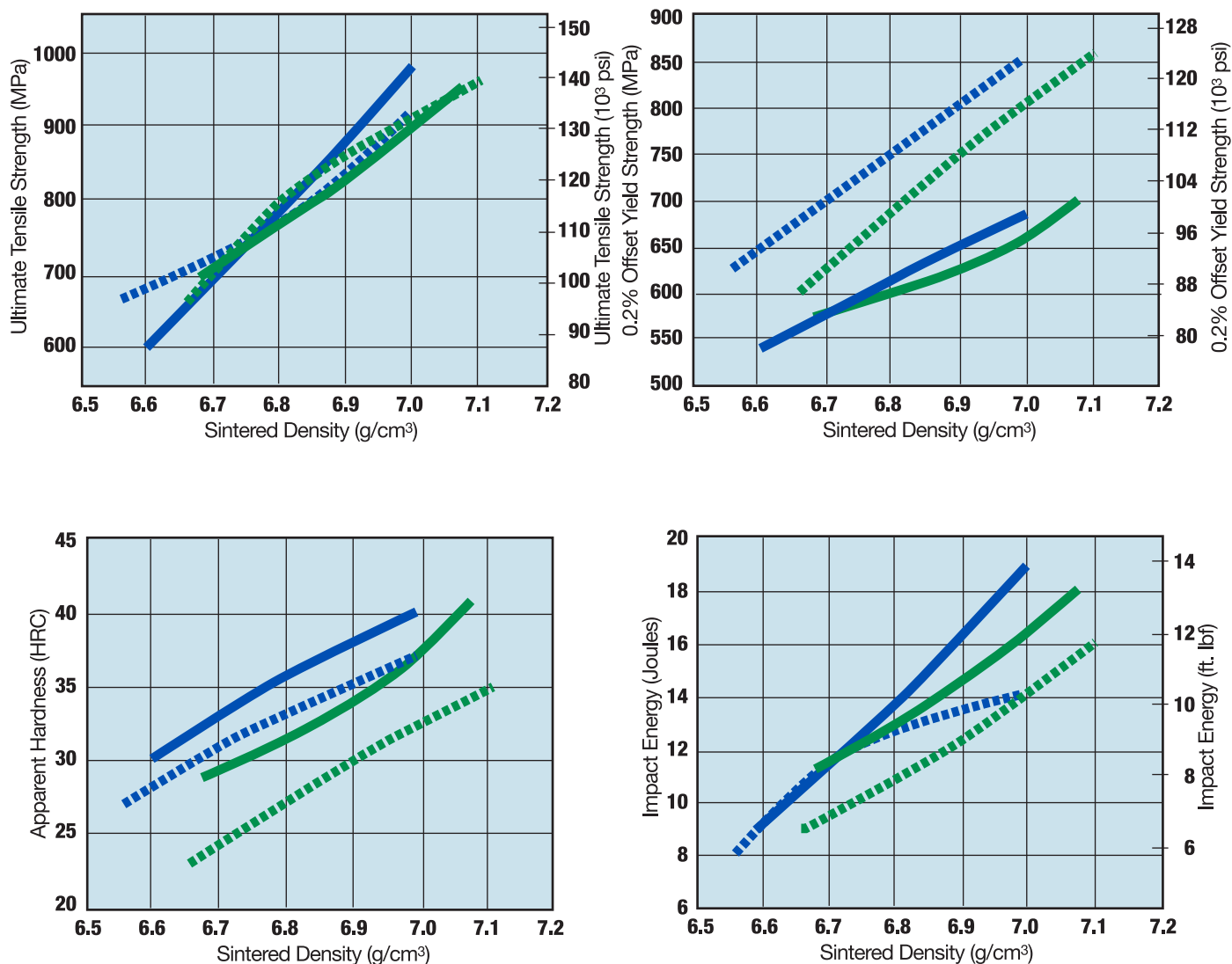
All premixes were made with 0.75 w/o Acrawax C as the lubricant. All compacts were sintered at 1120 °C (2050 °F) in a 90 v/o nitrogen/ 10 v/o hydrogen atmosphere for 15 minutes at temperature-accelerated cooling conditions include 2.75 inch/minute belt speed and 30 Hz Varicool settings leading to an average cooling rate of 1.6 °C/s in the sample between 650 °C (1200 °F) and 315 °C (600 °F); followed by a 200 °C (400 °F) temper for one hour.



End-quench Jominy bars were prepared from premixes containing 0.75 w/o Acrawax C and compacted to a density of 7.0 g/cm³. The bars were sintered at 1120 °C (2050 °F) in a 90 v/o nitrogen/ 10 v/o hydrogen atmosphere for 15 minutes at temperature. The bars were austenitized at 900 °C (1650 °F) for 30 minutes and end-quenched according to Standards ASTM A 255 and MPIF 65.

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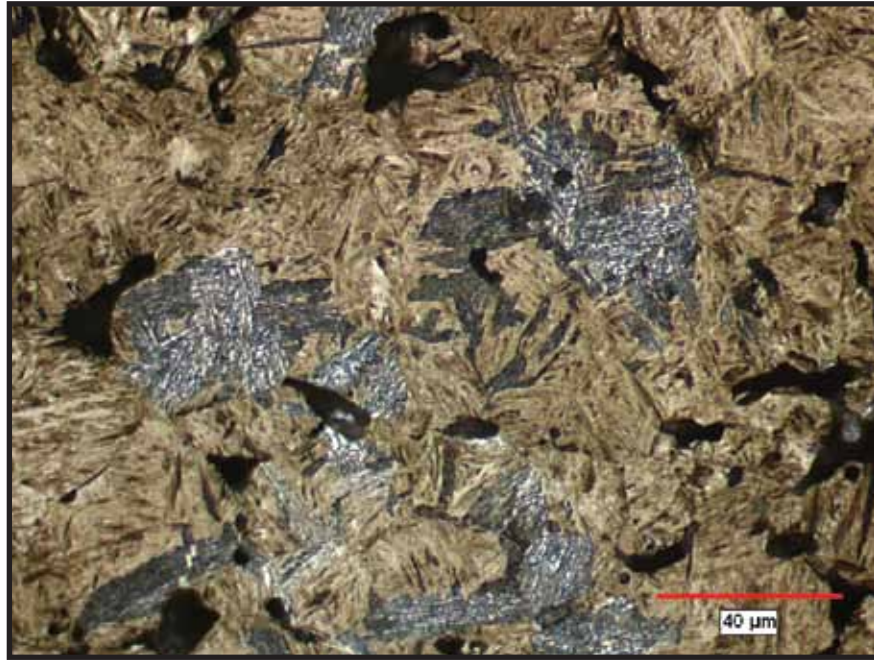
Properties vs. Sintered Density



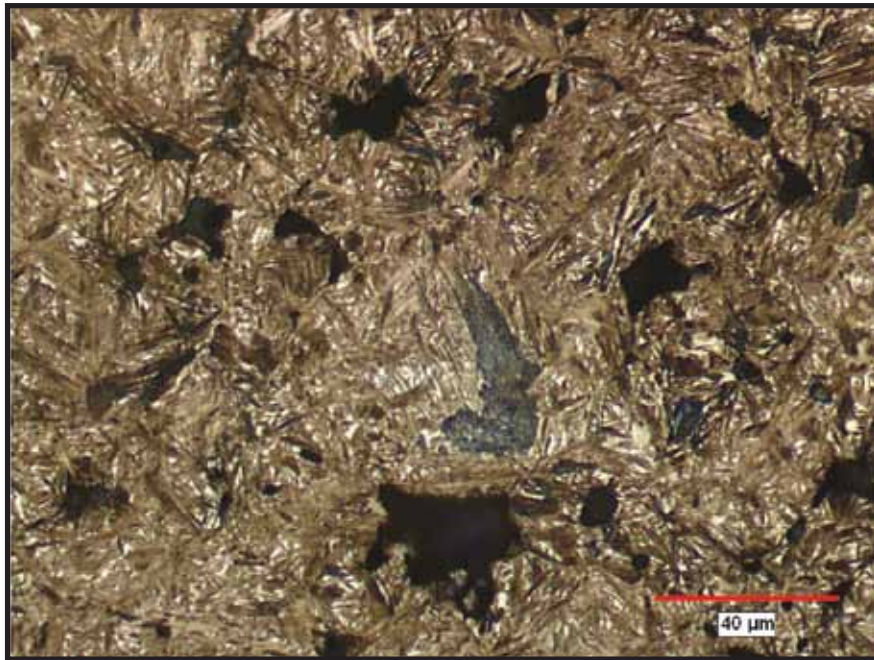
All premixes were made with 0.75 w/o Acrawax C as the lubricant. All compacts were sintered at 1120 °C (2050 °F) in a 90 v/o nitrogen/ 10 v/o hydrogen atmosphere for 15 minutes at temperature-accelerated cooling conditions include 2.75 inch/minute belt speed and 30 Hz Varicool settings leading to an average cooling rate of 1.6 °C/s in the sample between 650 °C (1200 °F) and 315 °C (600 °F); followed by a 200 °C (400 °F) temper for one hour.

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Microstructures



Ancorsteel® 721 SH with 1% Cu and 0.7% graphite compacted at 690 MPa.



Ancorsteel® 721 SH with 2% Cu and 0.9% graphite compacted at 690 MPa.

The samples were sintered at 1120 °C (2050 °F) in a 90 v/o nitrogen/ 10 v/o hydrogen atmosphere for 15 minutes at temperature - accelerated cooling conditions include 2.75 inch/minute belt speed and 30 Hz Varicool settings leading to an average cooling rate of 1.6 °C/s in the sample between 650 °C (1200 °F) and 315 °C (600 °F); followed by a 200 °C (400 °F) temper for one hour.

IMPORTANT NOTICE: The data shown are based on laboratory processing standard test specimens. Results may vary from that obtained in production processing.